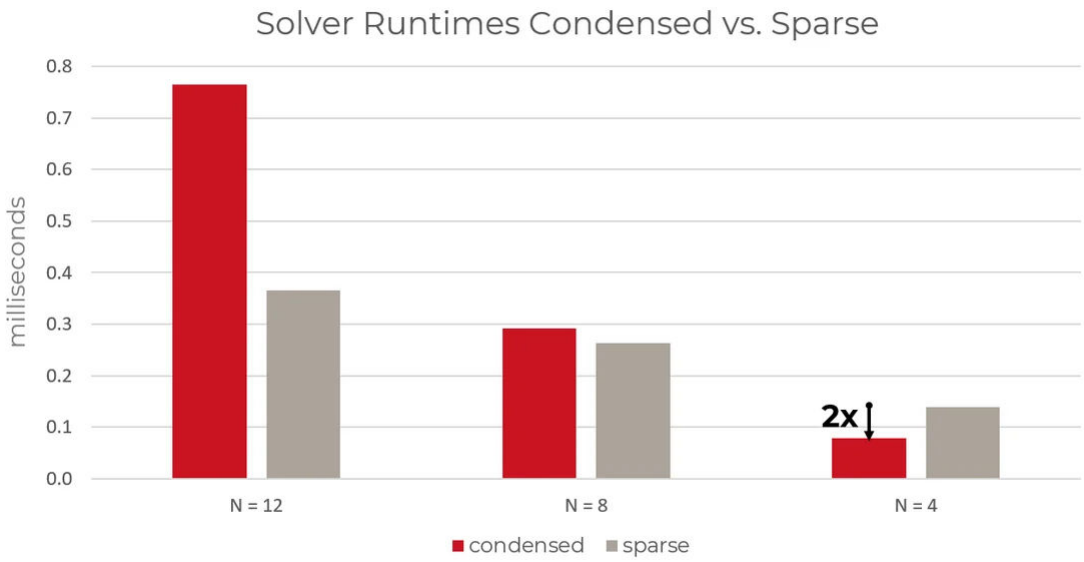
FORCESPRO 6.3.0 Release

FORCESPRO

Performance Boost for Small-scale QPs

Support for condensing: The new version FORCESPRO 6.3.0 supports automatic elimination of optimization variables related to dynamic states (also known as “condensing”). This closes a performance gap when solving small-scale quadratic programming (QP) problems, such as MPC problems with short control horizon.



The figure compares the average runtimes on a desktop PC of a FORCESPRO PDIP solver with and without condensing for a linearized overhead crane example. While the existing sparse formulation clearly outperforms condensing on longer horizons, condensing shows a significant performance boost on very short horizons.

Whenever possible the necessary condensing steps are pre-computed offline to minimize solver runtime. If pre-computation is not possible, e.g. because certain quantities are provided as real-time parameters, a highly

efficient online implementation is integrated within your generated solver. An illustrating example can be found here.

Tools for working with generated solver: Problem parameters for the generated solver can now also be conveniently loaded and stored from within the Python client. Moreover, an example illustrating how a generated solver can be compiled within an C++ application has been added.

The plugin for MathWorks' Model Predictive Control Toolbox™ also supports the latest MATLAB release R2023b.

You can find a list of all algorithmic improvements in the Release Notes of FORCESPRO.
Existing users can easily switch to the new version by using our auto-update function.
Alternatively, you can use the new server at: https://forces-6-3-0.embotech.com.

Please note:

Releases 5.0.0 and 5.0.1 will go offline as of September 30, 2023. Please contact support[at]embotech.com in case you want to continue working with any of these versions.

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